

REMARKS

The claims are claims 1 to 4, 7, 8 and 21.

Claims 1 and 2 were rejected under 35 U.S.C. 112 as not described in application and as indefinite.

Claim 1 recites subject matter described in conformance to 35 U.S.C. 112. Claim 1 recites "an audio speaker having a voice coil aligned with the speaker cone along a central axis." The recited voice coil is voice coil illustrated in Figure 1. The recited "central axis" is axis 22 illustrated in Figures 1 and 2. The original application states at page 5, lines 14 to 19:

"Permanent magnet 14 has an aperture 18 substantially oriented about an axis 22. Permanent magnet 14 has a north pole N and a south pole S. Top plate 16 has an aperture 20 oriented about axis 22. Apertures 18,20 cooperate with bottom plate 12 to establish a cavity 24 within which is affixed a ferrous pole piece 26. A voice coil 30 is situated in part within cavity 24 oriented about pole piece 26 wound upon a voice coil bobbin 32. An air gap is established between voice coil 30 and top plate 16 when speaker 10 is in an assembled orientation with pole piece 26, bobbin 32 and voice coil 30 installed in cavity 24."

This passage states that permanent magnet 14, aperture 18 and aperture 20 are "oriented about axis 22," that apertures 18 and 20 establish cavity 24 and that ferrous pole piece 26 is within cavity 24. This passage states that voice coil 30 is within cavity 24 and oriented about pole piece 26. Taken together with Figure 1, it is clear that permanent magnet 14, aperture 18, aperture 20, cavity 24, ferrous pole piece 26 and voice coil 30 are circularly symmetrical about axis 22. Accordingly axis 22 is a circular axis.

Claim 1 recites subject matter described in conformance to 35 U.S.C. 112. Claim 1 recites "said first unit and said second unit disposed coaxially about an axis radially offset from said central axis." The recited axis radially offset from the central

axis is an axis through electromagnetic coil structure 62 and ferrous core structure 64 illustrated in Figures 1 and 2. The original application states at page 6, lines 17 to 25:

"A sensor apparatus 60 includes an electromagnetic coil structure 62 and a ferrous core structure 64. Ferrous core structure 64 is affixed to a supplemental top plate 66. Supplemental top plate 66 may be configured as an integral portion of top plate 16. Electromagnetic coil structure 62 is affixed to cone 43 at the rear of cone 43. Representative strut 45 is indicated in phantom in FIG. 1 to avoid cluttering illustration of sensor apparatus 60. Electromagnetic coil structure 62 is preferably affixed with cone 43 using a wedge 68. Wedge 68 is preferably configured appropriately to cause electromagnetic coil structure 62 to respond to motion by cone 43 in directions substantially parallel with axis 22."

Causing electromagnetic coil structure 62 "to respond to motion by cone 43 in directions substantially parallel with axis 22" defines the recited axis. Figure 1 illustrates this axis is "radially offset from the central axis." Figure 1 illustrates sensor 60 having electromagnetic coil structure 62 and ferrous core structure 64 mounted on supplemental top plate 66 to the left of axis 22 and not to the right of axis 22. Figure 1 illustrates strut 45 in phantom to "avoid cluttering" the illustration. These features of Figure 1 indicate that sensor 60 does not completely surround axis 22 as the circularly symmetrical parts permanent magnet 14, aperture 18, aperture 20, cavity 24, ferrous pole piece 26 and voice coil 30. The original application states at page 2, lines 22 and 23:

"Others have attempted to provide indication of speaker cone motion using a variety of electromagnetic coil structures coaxially arranged with the speaker voice coil."

Contrasting this invention with "structures coaxially arranged with the speaker voice coil" implies that the claimed structure is not

coaxial with the speaker voice coil. These descriptions indicate that sensor 60 is not coaxial with axis 22 and has a limited angular extent relative to axis 22. Accordingly, an axis through sensor 60 is radially offset from axis 22.

Claims 1 and 2 were rejected under 35 U.S.C. 103(a) as made obvious by the combination of Pulfrey U.S. Patent No. 5,493,620 and Saik et al U.S. Patent No. 4,312,118.

Claim 1 recites subject matter not made obvious by the combination of Pulfrey and Saik et al. Claim 1 recites "said first unit and said second unit disposed coaxially about an axis radially offset from said central axis." Claim 1 earlier recites "a voice coil aligned with the speaker cone along a central axis." This makes clear that the recited central axis is the joint axis of the voice coil and speaker cone. The OFFICE ACTION cites: velocity sensing structure 40 of Pulfrey as making obvious the recited variable reluctance sensor device; annular cylindrical permanent magnet 28 of Pulfrey as making obvious the recited first unit; and voice coil 30 of Pulfrey as making obvious the second unit offset from the axis. Inspection of Figures 1 and 2 of Pulfrey makes clear that velocity sensing structure 40, annular cylindrical permanent magnet 28 and voice coil 30 are coaxial with cone 21. The OFFICE ACTION cites Pulfrey at column 5, lines 5 to 20 as making obvious this limitation. This portion of Pulfrey states:

"The loudspeaker structure 20 includes a cone 21, a frame or basket 22, webs 23 and 24 and a main electromagnetic structure 25. The main electromagnetic structure 25 includes a rear cylindrical iron pole piece 26, an annular cylindrical permanent magnet 27, an inner annular cylindrical iron pole piece 28 and a thin voice coil nonconductive, nonmagnetic support or bobbin 29. A voice coil 30 is fixedly positioned on the bobbin 29. A front annular cylindrical iron pole piece 32 is positioned about the voice coil 30 and spaced radially therefrom. The voice coil 30 is positioned in the air gap defined between the inner annular pole piece 28 and the front cylindrical pole piece 32, the longitudinal extent of the

voice coil 30 is such that the same number of turns is always within the air gap, even at maximum deflections in either direction, a configuration usually referred to as 'overhang'."

The only teaching of remotely resembling the "radially offset" recited in claim 1 is "A front annular cylindrical iron pole piece 32 is positioned about the voice coil 30 and spaced radially therefrom." The Applicants respectfully submit that one skilled in the art viewing Pulfrey would understand front annular cylindrical iron pole piece 32 is coaxial with voice coil 30 and cone 21. This corresponds to the recited central axis and not the radially offset axis of the first unit and the second unit recited in claim 1. The OFFICE ACTION cites voice coil 30 as making obvious the second unit recited in claim 1. Voice coil 30 clearly cannot have an axis radially spaced offset from its own axis are required by the language of claim 1. The original application states at page 2, lines 22 and 23:

"Others have attempted to provide indication of speaker cone motion using a variety of electromagnetic coil structures coaxially arranged with the speaker voice coil."

Contrasting this invention with "structures coaxially arranged with the speaker voice coil" implies that the claimed structure is not coaxial with the speaker voice coil as taught in Pulfrey. Thus Pulfrey fails to make obvious the "said first unit and said second unit disposed coaxially about an axis radially offset from said central axis" limitation. Accordingly, claim 1 is allowable over the combination of Pulfrey and Saik et al.

Claims 2 and 7 are allowable be dependence upon allowable claim 1.

Claims 3 and 4 were ruled allowable except for dependence upon rejected base claim 1. These claims are now allowable because amended base claim 1 is allowable.

Claims 8 and 21 are allowed.

The Applicants respectfully request entry and consideration of this amendment. Entry of this amendment is proper at this time because the amendment serves only to clarify subject matter previously recited. Thus no new search or reconsideration is required.

The Applicants respectfully submit that all the present claims are allowable for the reasons set forth above. Therefore early entry of this amendment, reconsideration and advance to issue are respectfully requested.

If the Examiner has any questions or other correspondence regarding this application, Applicants request that the Examiner contact Applicants' attorney at the below listed telephone number and address to facilitate prosecution.

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Respectfully submitted,

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